

**BOTANICAL SURVEY OF THE SCRATCHGRAVEL HILLS
LEWIS AND CLARK COUNTY, MONTANA**

Prepared by:

Bonnie L. Heidel and Stephen V. Cooper
Montana Natural Heritage Program
1515 E. Sixth Avenue
Helena, MT 59620-1800

Prepared for:

U.S.D.I. Bureau of Land Management
P.O. Box 3388
Butte, Montana 59702-3388

Agreement No. 1422E930A960015, Task Order No. 9

April 1998

(©) 1998 Montana Natural Heritage Program

This report should be cited as follows:

Heidel, B. L. and S. V. Cooper. 1998. Botanical Survey of the Scratchgravel Hills. Unpublished report to the Bureau of Land Management. Montana Natural Heritage Program, Helena. 44 pp. + app.

SUMMARY

Systematic baseline survey was conducted in the Scratchgravel Hills, documenting two Montana plant species of special concern, two watch species, and six plant associations. They represent a biological crossroads pattern, made up of the following noteworthy features:

- An extensive population of lesser rushy milkvetch (*Astragalus convallarius*), a Great Basin plant species disjunct at the northern end of its range
- A small population of linearleaf fleabane (*Erigeron linearis*), a Columbia Plateau plant species disjunct at the eastern end of its range
- Two small populations of taxa that remain on the watch list because they live primarily or exclusively in Montana and nowhere else, Klausí bladderpod (*Lesquerella klausii*) and rabbitsfoot crazyweed (*Oxytropis lagopus* var. *conjugens*)
- Two relatively intact and well-developed Rocky Mountain plant associations that are noteworthy for their site-specific conditions, though not for their plant association rarity; the Douglas fir/rough fescue plant association (*Pseudotsuga menziesii/Festuca scabrella* p.a.), and the foothills form of the bluebunch wheatgrass plant association (*Pseudoroegneria spicatum* ñ *Bouteloua gracilis* p.a.)

One of these, the lesser rushy milkvetch occurrence, represents among the best examples in the state. Two more of these represent the only documented examples in the Helena Valley and among the most unusual examples in the state, including the linearleaf fleabane occurrence and the Douglas fir/rough fescue plant association.

The Scratchgravel Hills have a moderate level of state biodiversity significance warranting elevated attention to the most pressing management needs, noxious weed control.

ACKNOWLEDGEMENTS

The contributions of many people are reflected in this report. Cedron Jones (Montana Natural Heritage Program) provided site information, data digitizing and GIS maps. Element occurrence data processing was assisted by Katie Schletz (Montana Natural Heritage Program) and Cedron Jones. Scott Lee-Chadde (Montana Natural Heritage Program) ran the ECADs stratification. Sarah Gage (University of Washington Herbarium) provided verification of the *Erigeron linearis* specimen. Sally Sovey (Bureau of Land Management) provided encouragement and coordination needed to turn a project idea into an actuality. Tribute is paid to Jim Reichel, our extraordinary zoologist colleague in the Montana Natural Heritage Program.

This study was funded as a challenge cost-share between the U.S.D.I Bureau of Land Management and the Montana Natural Heritage Program.

TABLE OF CONTENTS

SUMMARY	3
ACKNOWLEDGEMENTS	4
INTRODUCTION	1
STUDY AREA	2
Geology	2
Soils	4
Climate	4
Flora	4
Vegetation	5
Wildlife	5
METHODS	5
Botanical methods	6
Ecological Methods	7
BOTANICAL RESULTS	10
<i>Astragalus convallarius</i> Greene var. <i>convallarius</i>	12
<i>Erigeron linearis</i> (Hook.) Piper	18
<i>Lesquerella klausii</i> Rollins	24
<i>Oxytropis lagopus</i> Nutt. var. <i>conjugens</i> Barneby	28
ECOLOGICAL RESULTS	33
Vegetation Descriptions: WOODLAND TYPES	34
Vegetation Descriptions: SHRUBLAND TYPE	37
Vegetation Descriptions: GRASSLAND TYPES	38
DISCUSSION	40
LITERATURE CITED	42

FIGURES

Figure 1. Scratchgravel Hills study area.	3
Figure 2. ECODATA plot locations in the Scratchgravel Hills	9
Figure 3. Sensitive plant locations in the Scratchgravel Hills.	11
Figure 4. <i>Astragalus convallarius</i> illustration.	13
Figure 5. <i>Erigeron linearis</i> illustration.	18
Figure 6. <i>Oxytropis lagopus</i> var. <i>conjugens</i> illustration.	30

TABLES

Table 1. Montana plant species of special concern in the Helena Valley area.	6
Table 2. Plant associations of the Scratchgravel Hills study area.	33

APPENDICES

Appendix A. Element Occurrences	
Appendix B. Photo Documentation	
Lesser rushy milkvetch (<i>Astragalus convallarius</i>)	
Linearleaf fleabance (<i>Erigeron linearis</i>)	
Klausí bladderpod (<i>Lesquerella klausii</i>)	
Woodland opening habitat supporting Klausí bladderpod	
Rabbitsfoot crazyweed (<i>Oxytropis lagopus</i> var. <i>conjugens</i>)	
Bluebunch wheatgrass perimeter; looking south to Helena	
Typical ponderosa pine/bluebunch wheatgrass plant association	
Coring mature Douglas-fir in the Douglas-fir/rough fescue plant association	
Bitterroot (<i>Lewisia rediviva</i>), a common plant in the Scratchgravel Hills	
Appendix C. Preliminary flora of the Scratchgravel Hills	
Appendix D. ECODATA analysis	